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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,607

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Jun Nishikawa

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08/05/2011

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WASHINGTON, DC 20001-4413

EXAMINER

JOHNSTON, PHILLIP A

ART UNIT

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MAIL DATE

DELIVERY MODE

08/05/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,607	<b>Applicant(s)</b> NISHIKAWA ET AL.	
	<b>Examiner</b> PHILLIP A. JOHNSTON	<b>Art Unit</b> 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-13 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3-8-2011; 6-2-2011</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

***Detailed Action***

1. This Office Action is submitted in response to the amendment filed 6-2-2011, wherein claim 14 has been amended. Claims 1-20 are pending. Claims 1-13 were previously withdrawn. Claims 14-20 are pending herein.

***Examiners Response to Arguments***

2. Applicants arguments are moot in view of new grounds for rejection necessitated by the applicant's amendment.

***Claims Rejection – 35 U.S.C. 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contain subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The particular subject matter contained in claim 1 includes the limitation “wherein the first optical system forms an intermediate image of the primary image surface independently from the second optical system, the intermediate image being formed between the first optical system and the second optical system, wherein the second optical system comprises a concave reflector that forms a secondary image independently from the first optical system, the secondary image corresponding to the secondary image surface according to the intermediate image.”

One skilled in the art of projection optical systems would recognize that, a first optical system can be physically separate and thereby independent from a second optical, and that the

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two independent optical systems can form separate and independent images; however, the two independent optical systems cannot form images independently from each other as long as they both share a common element such as a mirror or a light source, because they are both using the same light beam from the same source and both use the light reflected from the same mirror.

The applicant's specification and drawings contain no description relating to forming an intermediate image with the second optical system independently of the first optical system and vice versa, which would be required for any person skilled in the art to make and use the claimed invention.

Therefore, since the specification does not disclose any details regarding forming an intermediate image with the second optical system independently of the first optical system and vice versa, the examiner concludes that the specification does not enable the full scope of the claim.

For purposes of this examination the examiner will assume claim 14 does not include the newly added limitation.

***Claims Rejection - 35 U.S. C. 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 14 is rejected under 35 U.S.C. 102 (b) as being anticipated by Davis, U. S. Patent No. 6,619, 804.

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7. Regarding claim 14, Davis discloses at Col. 3, line 38-67; and Col. 4, line 1-33; the projection display apparatus shown below in Figure 3 that includes the following;

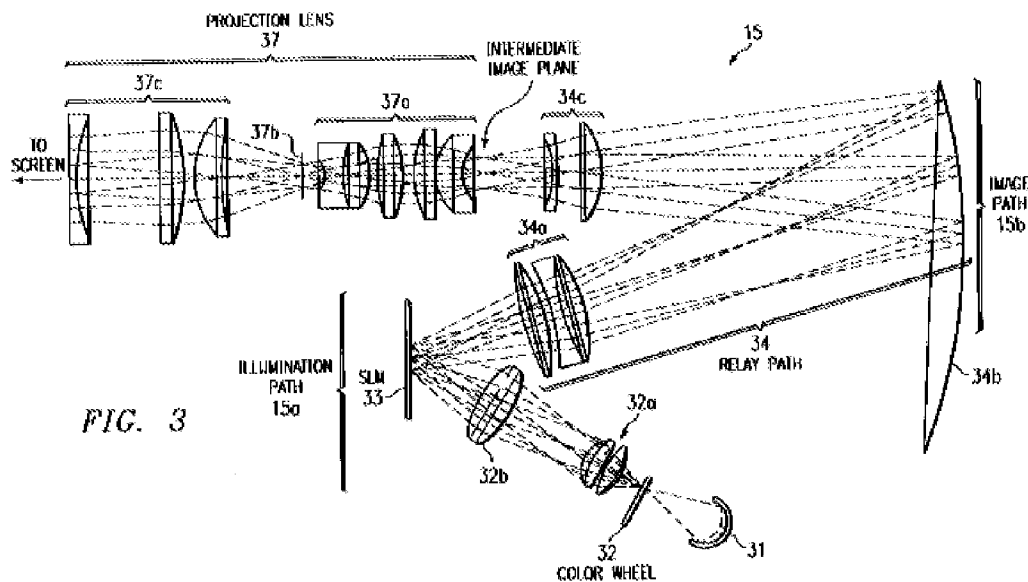


FIG. 3

(a) Light source 31,

(b) Modulator SLM 33 that modulates the light source based on digitized video signals. See Col. 3, line 22-37

(c) A first optical system that includes the following optical elements; lens set 34a, concave mirror 34b and lens set 34c, which forms an intermediate image of SLM 33 (the primary image surface) at the intermediate image plane, of lenses 34a as shown in Figure 3 above. Col. 4, line 16-33,

(d) A second optical system that also utilizes concave mirror 34b and the optical elements of Projection Lens 37 (note Figure 3 above) to create an image on the display system screen (the secondary image surface). Col. 4, line 16-33,

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(e) An optical path represented by the three ray bundles shown in Figure 3 above, which reflect from the center and extremities of modulator SLM 33 (the primary imaging surface Col. 1, line 27-43), where the light first crosses the optical axis in light path 34 then reflects off the concave mirror 34b and crosses the optical axis again at the intermediate image plane then travels through the projection optics to the screen (the secondary image surface). See Col. 3, line 38-67; and Col. 4, line 1-33.

***Claims Rejection – 35 U.S.C. 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiller, USPN, 6,233,024, in view of Davis, 6,619,804, and in further view of Cotton, USPN 6719,430.

10. Regarding claim 14, Hiller teaches a video projection system at Col. 7, line 10-63 including projection assembly 1 (note Figure 1) that contains a light source; optics and a modulator for scanning a light bundle in two dimensions off a plane mirror 3 to a screen 2.

11. Hiller fails to teach a projection optical system for enlarged projection from a primary image surface toward the modulation means to a secondary image surface toward a screen, wherein the projection optical system includes: a first optical system that forms an intermediate image of the primary image surface; and a second optical system having a concave reflector that forms a secondary image corresponding to the secondary image surface according

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to the intermediate image, wherein a light beam travels from the center of the primary image surface to the center of the secondary image surface, crosses an optical axis of the first optical system, reflects on the concave reflector, crosses the optical axis again, and reaches the secondary image surface.

Davis discloses a projection display apparatus shown above in Figure 3 that includes the following;

(c) A first optical system that includes the following optical elements; lens set 34a, concave mirror 34b and lens set 34c, which forms an intermediate image of SLM 33 (the primary image surface) at the intermediate image plane, of lenses 34a as shown in Figure 3 above. Col. 4, line 16-33,

(d) A second optical system that also utilizes concave mirror 34b and the optical elements of Projection Lens 37 (note Figure 3 above) to create an image on the display system screen (the secondary image surface). Col. 4, line 16-33,

(c) An optical path represented by the three ray bundles shown in Figure 3 above, which reflect from the center and extremities of modulator SLM 33 (the primary imaging surface Col. 1, line 27-43), where the light first crosses the optical axis in light path 34 then reflects off the concave mirror 34b and crosses the optical axis again at the intermediate image plane then travels through the projection optics to the screen (the secondary image surface). See Col. 3, line 38-67; and Col. 4, line 1-33.

Davis modifies Hiller to provide an optical engine that provides for a high contrast, telecentric, on-axis image by a relay path between the modulator and the projection lens, where the relay path places the image at an intermediate image plane accessible by a projection lens.

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Hiller teaches a cabinet containing a large mirror for deflecting an image onto the screen mounted at the front of the cabinet from a projector mounted at the rear of the cabinet. See Abstract.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Hiller would use the optical engine of Davis to provide a modulation based projection optical apparatus that combines characteristics of both telecentric and non-telecentric designs in order to provide a display having optimum contrast. Col. 2, line 24-31.

12. Regarding claims 16 and 17, Hiller discloses at Col. 7, line 10-35; and line 55-63 a screen disposed in a housing or cabinet as shown in Figure 1 above having a video picture reflected onto the back of the screen from a plane mirror at the top of the cabinet via an optical system located at the bottom of the cabinet, where the viewer is located in front of the screen, which one of ordinary skill recognizes would require a transmissive screen.

13. Regarding claims 18 and 19, Hiller discloses at col. 4, line; and col. 5, line 1-4, a screen and a Fresnel lens whose object-side focal point is imaged in the exit pupil of the magnification optics or of the deflecting device and whose Fresnel structure lies on the light entrance side considered in the direction of light, followed by a disk for vertical and horizontal scattering.

14. Regarding claim 20, Hiller discloses at Col. 5, line 5-23, a plane reflector positioned immediately before the screen and optimizing the projected image with respect to the size of the cabinet by varying the angle  $\delta$  between the screen and the plane reflector while varying the deflection angle  $\alpha$  between the screen and light beam furthest from (outmost) the screen, which one of ordinary skill recognizes that the angular relationship of Hiller would include the claimed angular range for the tangent of angle  $\alpha$ .

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15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiller, USPN, 6,233,024, in view of Davis, 6,619,804, and in further view of Cotton, USPN 6,719,430.

16. Regarding claim 15, the combination of Hiller and Davis discloses all limitations of claim 15, as described above regarding claim 14, where Hiller teaches a rear projector optical system with an optical path that is folded via a large mirror in order to provide a video projector that has a small housing depth. Col. 1, line 30-35.

The combination of Hiller and Davis fails to disclose first and second optical systems having rotationally symmetric optical surfaces.

Cotton discloses the use of substantially rotationally symmetric lens groups in a projection display apparatus. Col. 8, line 46-50.

Cotton modifies the combination of Hiller and Davis to provide rotationally symmetric optical elements for the correction of optical aberrations in a projection system while maintaining the ability to produce an image on a tilted image plane that is corrected for anamorphic distortion.

Therefore it would have been obvious to one of ordinary skill in the art that the combination of Hiller and Davis would use the rotationally symmetric optical surfaces of Cotton, in order to spread out the optical power of the cylindrical elements thereby providing an optical system having a reduced optical path that produces an accurate image on a screen, which does not suffer from improperly focused images and image distortions. Col. 2, line 28-36.

### ***Conclusion***

17. The Amendment filed on 6-2-2011 has been considered but the arguments are moot in view of new grounds for rejection.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Robert Kim can be reached at (571) 272-2293. The fax phone number for the organization where the application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system,

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see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

August 1, 2011

/PHILLIP A JOHNSTON/

Primary Examiner, Art Unit 2881